

**Date:** August 13, 2015  
**To:** Richard Karl, Superfund Division Director  
**From:** Joan Tanaka, Remedial Response Branch 1 Chief  
**Subject:** Current Mine Site Activity in Remedial Program

I reviewed, with program staff, current mine site work in the Region 5 remedial and pre-remedial program. Current mine activity was identified at three sites: Bautsch-Gray Mine National Priorities List/Removal Site, Marsden-Black Jack Mine Pre-Remedial Site, and Inspiration Mine Pre-Remedial Site. Current status and planned activity are summarized below.

The Bautsch-Gray mine has no mining wastewater onsite and has been stabilized with respect to stormwater via Removal Program activity. Remedial investigation (RI) sampling has been conducted. Currently report writing is underway. Possible future field work includes additional RI sampling, then future remedial design sampling and activity before remedial action. Site conditions indicate that the site is sufficiently stable to continue future planned work.

Additional non-intrusive sampling activities are planned for the Marsden-Black Jack Mine and Inspiration Mine Pre-Remedial sites. Site conditions indicate that the sites are sufficiently stable to proceed with this planned work.

**Bautsch-Gray Mine NPL and Removal Site**  
**Remedial Investigation – 2013 to present**

The Bautsch-Gray Mine site is approximately 5 miles south of Galena, Illinois, on Blackjack Road. The site includes three principal sources: (1) an estimated 40 acres of mine tailings pile, (2) a horseshoe-shaped settling pond west of the mine tailings pile, and (3) contaminated soil along the overland flow route from the settling Pond to Smallpox Creek. All three source areas contain elevated levels of arsenic, cadmium, lead, manganese, and zinc. The site is surrounded by forested area, residential property, intermittent agricultural fields, wetlands, and Smallpox Creek. Contamination from the Bautsch-Gray Mine site has affected areas within a flow path to Smallpox Creek, a wetlands northwest of the site, and Smallpox Creek. Water samples from a residential well located adjacent to the site contain elevated levels of lead; however, it has not been determined whether the lead is related to the underlying natural ore body or the tailings pile.

Field work was conducted in two phases and focused on three general areas, (1) the three principal source areas, (2) wetlands to the north, and (3) Smallpox Creek. The main investigation was performed in the principal source areas to delineate the vertical and horizontal extent of metals contamination as a direct result of the mine tailings pile. Phase I field work was conducted in May 2014 and Phase II field work was conducted in November 2014. We are currently in the process of reviewing and finalizing the Remedial Investigation Report.

**Removal Actions - 2009 -2013**

After large rain events in August 2009 and July 2010 contaminated mine tailings were flushed

from the main tailings pile across Blackjack Road onto residential property and the horseshoe shaped area. A removal site assessment was conducted in October 2009. EPA identified several areas of contaminated soil and tailings. The areas exceeding action levels included around and on the mine tailings pile, around the former tailings pond horseshoe-shaped area, and in and round ditches along Blackjack road. An action memo was signed on May 17, 2010, authorizing removal action at the site.

Removal activities at a horseshoe-shaped area (Horseshoe Area) of the Site were conducted from approximately September 10 through October 5, 2012. Removal activities at the Horseshoe Area consisted of grading, placement of topsoil and biosolids over the area, seeding, and excavation of a drainage channel lined with riprap. The objective of the remediation was to cover the settling pond with vegetative growth to prevent surface migration of lead- and arsenic-contaminated mine tailings in the area. Biosolids transported from Galena, Illinois and Rockford, Illinois were spread over segments of the settling pond area to achieve the objective. Other sections were covered with topsoil or a mix of biosolids and topsoil thought to be most appropriate to promote growth within portions of the area. EPA analyzed the biosolids to identify any potential contaminants before they were applied over the settling pond.

### ***Removal Chronology***

In 2009, EPA, EPA START contractor Weston, and the Emergency and Rapid Response Services (ERRS) contractor (LATA-Kemron) removed mine tailings and soil from the residential property across the street from the Bautsch-Gray Mine (Weston 2011a). Mine tailings and soil along Blackjack Road were also removed and placed at the center of the mine tailings pile. Removal criteria were based on the residential cleanup level of 400 mg/kg for lead and 25 mg/kg for arsenic. Clean fill was used to replace the excavated soil.

In addition to removing soil from the nearby residential property and along Blackjack Road, EPA and its contractors designed and constructed stormwater retention ponds on the tailings pile to prevent further migration of contaminated tailings and soils beyond the boundaries of the property. Four of the five planned stormwater retention ponds were created for mitigation efforts, complete with discharge pipes and overflow weirs. A stormwater drainage ditch was also created to divert 50 acres of runoff from the uphill watershed around the east and north sides of the mine tailings area.

In July 2010, the potentially responsible party (PRP) for the site contracted installation of a reverse osmosis drinking water filtration system at the residence across the street from the mine tailings pile (RW-01) (Weston 2011b). The PRP was responsible for operation and maintenance for 2 years, after which the homeowner was to assume that responsibility.

In July 2011, another major storm event caused additional migration of mine tailings onto the residential property across the street from the mine tailings pile and damaged the retention ponds (Weston 2011b). Before the storm event, EPA and its contractors had completed soil removal from the residential property across the street and were completing the last stormwater retention pond. Rainfall exceeded the design expectation during the storm event, damaging several of the ponds and drainage ditches. As a result, soil migrated back onto the residential property, necessitating additional removal and confirmation sampling. Several of the damaged retention

ponds were abandoned or redesigned and rebuilt, resulting in four completed retention ponds. Other features compromised during the 2011 storm event were also rebuilt.

### **Marsden-Black Jack Mine Pre-Remedial Site**

The Marsden-Black Jack Mine site is located about 3 miles south of Galena, Illinois and is adjacent to the Bautsch Grey Mine site. The site was a former lead and zinc mine that operated intermittently from 1854 until 1951. Mine tailings and soils and sediments with elevated lead and zinc concentrations are spread throughout two primary drainage ways leading from the mine shaft area into an unnamed creek flowing north and south on the east side of the facility. The unnamed creek feeds into Small Pox Creek which in turn feeds into the Mississippi River. The two waste piles of mine tailings which were identified on the site together cover over 0.9 acres. A portion of one of the waste piles is used as a parking lot. Samples recently collected during the SI found concentrations of lead in soils and waste ranging from 495 mg/kg to 14,700 mg/kg. Laboratory analysis identified concentrations of zinc in soils and waste on the site ranging from 9,950 mg/kg to 37,800 mg/kg. Similarly, concentrations of lead in sediments collected on the site ranged from 146 mg/kg to 5,610 mg/kg. Concentrations of zinc in sediments as determined by laboratory analysis ranged from 1,030 mg/kg to 15,200 mg/kg.

### **Inspiration Mine Pre-Remedial Site**

The Inspiration Mine site is located about 3 miles north of Galena, Illinois. CERCLA assessment work was conducted at this site in the 1980s and most recently in 1999. The site is a 48 acre inactive lead and zinc mining and milling facility which was established in 1947 and owned by Eagle Picher Mines. The facility remained an active mine until 1966 when mining ceased. However, mined material continued to be brought to the milling operation from other area mines and milling processes continued until 1973. Assessments previously conducted at the indicated tailings piles were present on the site and that waste water from jigging operations had previously been injected down an unused mine shaft. Historically, part of the site had been sold and used to pasture horses, which were found to have been impacted by elevated levels of lead, resulting in the PRPs repurchasing the property and implementing investigations and remedial actions in the late 1980s. The site drains to the Galena River. Sampling has been conducted by IEPA along part of this drainage system in 2000 and 2005 as part of assessment work at another nearby mine site called Little Grant Mine.